

SEQUENCE LISTING

<110> ITOH, Kyogo et al.

<120> NOVEL TUMOR ANTIGEN PROTEIN SART-3 AND TUMOR ANTIGEN PEPTIDES THEREOF

<130> 0020-4817P

<140> 09/763,985

<141> 2001-02-28

<160> 64

<170> PatentIn version 3.1

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ttt ccc ttg act gaa gag ctc tgg ctg gag tgg ctg cat gac gag atc Phe Pro Leu Thr Glu Glu Leu Trp Leu Glu Trp Leu His Asp Glu Ile 145	150		155	482
agc atg gcc cag gat ggc ctg gac aga gag cac gtg tat gac ctc ttt Ser Met Ala Gln Asp Gly Leu Asp Arg Glu His Val Tyr Asp Leu Phe 160	165	170		530
gag aaa gcc gtg aag gat tac att tgt cct aac att tgg cta gag tat Glu Lys Ala Val Lys Asp Tyr Ile Cys Pro Asn Ile Trp Leu Glu Tyr 175	180	185		578
ggc cag tac tca gtt ggt ggg att ggt cag aaa ggt ggc ctt gag aaa Gly Gln Tyr Ser Val Gly Ile Gly Gln Lys Gly Leu Glu Lys 190	195	200	205	626
gtt cgc tcc gtg ttt gaa agg gct ctc tcg tct gtt ggt tta cat atg Val Arg Ser Val Phe Glu Arg Ala Leu Ser Ser Val Gly Leu His Met 210	215	220		674
acc aaa gga ctc gcc ctc tgg gag gct tac cga gag ttt gaa agt gcg Thr Lys Gly Leu Ala Leu Trp Glu Ala Tyr Arg Glu Phe Glu Ser Ala 225	230	235		722
att gtg gaa gct gct cggtt gag aaa gtc cac agt ctt ttc cggtt cga Ile Val Glu Ala Ala Arg Leu Glu Lys Val His Ser Leu Phe Arg Arg 240	245	250		770
cag ttg gcg atc cca ctc tat gat atg gag gcc aca ttt gca gag tat Gln Leu Ala Ile Pro Leu Tyr Asp Met Glu Ala Thr Phe Ala Glu Tyr 255	260	265		818
gaa gaa tgg tca gaa gac cca ata cca gag tca gta att cag aac tat Glu Glu Trp Ser Glu Asp Pro Ile Pro Glu Ser Val Ile Gln Asn Tyr 270	275	280	285	866
aac aaa gca cta cag cag ctg gag aaa tat aaa ccc tat gaa gaa gca Asn Lys Ala Leu Gln Gln Leu Glu Lys Tyr Lys Pro Tyr Glu Glu Ala 290	295	300		914
ctg ttg cag gca gag gca cca agg ctg gca gaa tat caa gca tat atc Leu Leu Gln Ala Glu Ala Pro Arg Leu Ala Glu Tyr Gln Ala Tyr Ile 305	310	315		962
gat ttg gag atg aaa att ggc gat cct gct cgc att cag ttg atc ttt Asp Phe Glu Met Lys Ile Gly Asp Pro Ala Arg Ile Gln Leu Ile Phe 320	325	330		1010
gag cgc gcc ctg gtc gag aac tgc ctt gtc cca gac tta tgg atc cgt Glu Arg Ala Leu Val Glu Asn Cys Leu Val Pro Asp Leu Trp Ile Arg 335	340	345		1058

tac agt cag tac cta gat cga caa ctg aaa gta aag gat ttg gtt tta Tyr Ser Gln Tyr Leu Asp Arg Gln Leu Lys Val Lys Asp Leu Val Leu 350	355	360	365	1106	
tct gta cat aac cgc gct att aga aac tgc ccc tgg aca gtt gcc tta Ser Val His Asn Arg Ala Ile Arg Asn Cys Pro Trp Thr Val Ala Leu 370	375		380	1154	
tgg agt cgg tac ctc ttg gcc atg gag aga cat gga gtt gat cat caa Trp Ser Arg Tyr Leu Leu Ala Met Glu Arg His Gly Val Asp His Gln 385	390		395	1202	
gta att tct gta acc ttc gag aaa gct ttg aat gcc ggc ttc atc cag Val Ile Ser Val Thr Phe Glu Lys Ala Leu Asn Ala Gly Phe Ile Gln 400	405		410	1250	
gcc act gat tat gtg gag att tgg cag gca tac ctt gat tac ctg agg Ala Thr Asp Tyr Val Glu Ile Trp Gln Ala Tyr Leu Asp Tyr Leu Arg 415	420		425	1298	
aga agg gtt gat ttc aaa caa gac tcc agt aaa gag ctg gag gag ttg Arg Arg Val Asp Phe Lys Gln Asp Ser Ser Lys Glu Leu Glu Glu Leu 430	435		440	445	1346
agg gcc gcc ttt act cgt gcc ttg gag tat ctg aag cag gag gtg gaa Arg Ala Ala Phe Thr Arg Ala Leu Glu Tyr Leu Lys Gln Glu Val Glu 450	455		460	1394	
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tgg gct agg att gag gct cga ctg tgc aat aac atg cag aaa gct cgg Trp Ala Arg Ile Glu Ala Arg Leu Cys Asn Asn Met Gln Lys Ala Arg 480	485		490	1490	
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cac tgc cgg aag gct ctg cac cgg gcc gtc cag tgc acc acc agt gac tac His Cys Arg Lys Ala Leu His Arg Ala Val Gln Cys Thr Ser Asp Tyr 530	535		540	1634	
cca gag cac gtc tgc gaa gtt tta ctc acc atg gag agg aca gaa ggt Pro Glu His Val Cys Glu Val Leu Leu Thr Met Glu Arg Thr Glu Gly 545	550		555	1682	
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ctt gtg cag caa gaa gaa aag gct gaa caa cgg aaa aga gct cgg Leu Val Gln Gln Glu Glu Lys Ala Glu Gln Arg Lys Arg Ala Arg	590                   595                   600                   605	1826
gct gag aag aaa gcg tta aaa aag aag aaa aag atc aga ggc cca gag Ala Glu Lys Lys Ala Leu Lys Lys Lys Ile Arg Gly Pro Glu	610                   615                   620	1874
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gct gga gaa aca caa aat gta gaa gta gca gca ggg ccc gct ggg aaa Ala Gly Glu Thr Gln Asn Val Glu Val Ala Ala Gly Pro Ala Gly Lys	655                   660                   665	2018
tgt gct gcc gta gat gtg gag ccc cct tcg aag cag aag gag aag gca Cys Ala Ala Val Asp Val Glu Pro Pro Ser Lys Gln Lys Glu Lys Ala	670                   675                   680                   685	2066
gcc tcc ctg aag agg gac atg ccc aag gtg ctg cac gac agc agc aag Ala Ser Leu Lys Arg Asp Met Pro Lys Val Leu His Asp Ser Ser Lys	690                   695                   700	2114
gac agc atc acc gtc ttt gtc agc aac ctg ccc tac agc atg cag gag Asp Ser Ile Thr Val Phe Val Ser Asn Leu Pro Tyr Ser Met Gln Glu	705                   710                   715	2162
ccg gac acg aag ctc agg cca ctc ttc gag gcc tgt ggg gag gtg gtc Pro Asp Thr Lys Leu Arg Pro Leu Phe Glu Ala Cys Gly Glu Val Val	720                   725                   730	2210
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tac gtg gag ttt aaa gaa gag aaa tca gcc ctt cag gca ctg gag atg Tyr Val Glu Phe Lys Glu Glu Lys Ser Ala Leu Gln Ala Leu Glu Met	750                   755                   760                   765	2306
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Arg Thr Gln Leu Ser Leu Leu Pro Arg Ala Leu Gln Arg Pro Ser Ala			
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gca gct cct cag gct gag aac ggc cct gcc gcg gct cct gca gtt gcc		2834	
Ala Ala Pro Gln Ala Glu Asn Gly Pro Ala Ala Ala Pro Ala Val Ala			
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gcc cca gca gcc acc gag gca ccc aag atg tcc aat gcc gat ttt gcc		2882	
Ala Pro Ala Ala Thr Glu Ala Pro Lys Met Ser Asn Ala Asp Phe Ala			
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Lys Leu Phe Leu Arg Lys			
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Gly Glu Tyr Glu Trp Glu Tyr Asp Glu Glu Glu Glu Lys Asn Gln Leu		
85	90	95

Glu Ile Glu Arg Leu Glu Glu Gln Leu Ser Ile Asn Val Tyr Asp Tyr		
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Asn Cys His Val Asp Leu Ile Arg Leu Leu Arg Leu Glu Gly Glu Leu		
115	120	125

Thr Lys Val Arg Met Ala Arg Gln Lys Met Ser Glu Ile Phe Pro Leu

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Gln Asp Gly Leu Asp Arg Glu His Val Tyr Asp Leu Phe Glu Lys Ala  
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Val Lys Asp Tyr Ile Cys Pro Asn Ile Trp Leu Glu Tyr Gly Gln Tyr  
180    185                            190  
  
Ser Val Gly Gly Ile Gly Gln Lys Gly Gly Leu Glu Lys Val Arg Ser  
195    200                            205  
  
Val Phe Glu Arg Ala Leu Ser Ser Val Gly Leu His Met Thr Lys Gly  
210    215                            220  
  
Leu Ala Leu Trp Glu Ala Tyr Arg Glu Phe Glu Ser Ala Ile Val Glu  
225    230                            240  
  
Ala Ala Arg Leu Glu Lys Val His Ser Leu Phe Arg Arg Gln Leu Ala  
245    250                            255  
  
Ile Pro Leu Tyr Asp Met Glu Ala Thr Phe Ala Glu Tyr Glu Glu Trp  
260    265                            270  
  
Ser Glu Asp Pro Ile Pro Glu Ser Val Ile Gln Asn Tyr Asn Lys Ala  
275    280                            285  
  
Leu Gln Gln Leu Glu Lys Tyr Lys Pro Tyr Glu Glu Ala Leu Leu Gln  
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Ala Glu Ala Pro Arg Leu Ala Glu Tyr Gln Ala Tyr Ile Asp Phe Glu  
305    310                            320  
  
Met Lys Ile Gly Asp Pro Ala Arg Ile Gln Leu Ile Phe Glu Arg Ala  
325    330                            335  
  
Leu Val Glu Asn Cys Leu Val Pro Asp Leu Trp Ile Arg Tyr Ser Gln  
340    345                            350  
  
Tyr Leu Asp Arg Gln Leu Lys Val Lys Asp Leu Val Leu Ser Val His  
355    360                            365

Asn Arg Ala Ile Arg Asn Cys Pro Trp Thr Val Ala Leu Trp Ser Arg  
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Tyr Leu Leu Ala Met Glu Arg His Gly Val Asp His Gln Val Ile Ser  
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Phe Thr Arg Ala Leu Glu Tyr Leu Lys Gln Glu Val Glu Glu Arg Phe  
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Asp Ser Ile Met Thr Arg Gly Asn Ala Lys Tyr Ala Asn Met Trp Leu  
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Gln Glu Glu Glu Lys Ala Glu Gln Arg Lys Arg Ala Arg Ala Glu Lys  
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Thr Gln Asn Val Glu Val Ala Ala Gly Pro Ala Gly Lys Cys Ala Ala  
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Val Asp Val Glu Pro Pro Ser Lys Gln Lys Glu Lys Ala Ala Ser Leu  
675 680 685

Lys Arg Asp Met Pro Lys Val Leu His Asp Ser Ser Lys Asp Ser Ile  
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Phe Lys Glu Glu Lys Ser Ala Leu Gln Ala Leu Glu Met Asp Arg Lys  
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Ser Val Glu Gly Arg Pro Met Phe Val Ser Pro Cys Val Asp Lys Ser  
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His Lys Leu Phe Ile Ser Gly Leu Pro Phe Ser Cys Thr Lys Glu Glu  
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Val Thr Asn Arg Ala Gly Lys Pro Lys Gly Leu Ala Tyr Val Glu Tyr  
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850 855 860

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Arg Lys Val Pro Glu Lys Pro Glu Thr Arg Lys Ala Pro Gly Gly Pro  
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Leu Ser Leu Leu Pro Arg Ala Leu Gln Arg Pro Ser Ala Ala Ala Pro  
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Gln Ala Glu Asn Gly Pro Ala Ala Ala Pro Ala Val Ala Ala Pro Ala  
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Ala Xaa Ile Asp Phe Glu Met Lys Xaa  
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